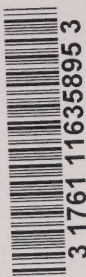


CAI  
T800  
-1986  
D022

Government  
Publications



---

Submission by Council of the Corporation of the City of Toronto





---

The City of Toronto  
Arthur C. Eggleton  
Mayor

---

Remarks by  
Mayor Art Eggleton  
to the Toronto Area Rail Transportation  
of Dangerous Goods Task Force

Tuesday January 12, 1988

## REMOVING A COMMUNITY THREAT

Mr. Chairman and Members of the Task Force,

The serious problems associated with the haulage of dangerous chemicals by rail through our busy downtown corridors are all too well known to members of the Task Force. Without seeming to be melodramatic, I think it fair to say that everyone realizes what might have happened had the 1979 Mississauga derailment occurred just 20 minutes later. Your consultants have estimated that the resultant damage might have reached \$1 billion, along with the grim reality of many dead and injured as the



escaping chlorine seeped through our streets and into our subway system.

We escaped but we may not be as fortunate again.

We recognize that these chemicals and their residues must be transported and that railways probably provide the best methodology. Yet there is a major safety issue involved, and there is no question that community safety must be the main justification for implementing major and necessary network revisions to today's rail system in the City of Toronto and the Greater Toronto Area.

The three routes carrying the heavy through volumes of dangerous goods in the inner city are the community's main focus of concern. They make up the major freight routes and represent, between them, over half the estimated risk potential in the Greater Toronto Area and are known as Special Hazard Sections (shown in Figure 1).

Statistically, the Task Force's measure of Societal Risk indicates that, on average, the Special Hazard Sections are burdened with a risk level ten times higher than the remaining rail



Digitized by the Internet Archive  
in 2024 with funding from  
University of Toronto

<https://archive.org/details/31761116358953>

segments within the Greater Toronto Area. This reflects both the heavy dangerous commodity flows (up to 75 carloads daily) and the high level of population exposure — 131,000 people living in the accident consequence zones of these sections.

In addition to the 131,000 residents area — 52,000 employees, 22,000 school children and 1,300 hospital occupants are present in these zones on a regular basis.

The hazard features of these sections can be characterized as follows:

1. They employ elevated rails for much of their length, with residential land uses immediately adjacent to narrow rights-of-way;
2. Portions of the Bloor, Yonge and Spadina subways are located in the rail hazard zones, carrying hundreds of thousands of passengers daily;



3. Widespread catchment basins — physically depressed areas which could retain escaped toxic and flammable substances — are closeby;
4. Thousands of students experience high exposure to these hazards levels--several school yards abut directly on the right-of-way;
5. Dupont Street, a busy shopping and industrial street runs within 100 feet of the North Toronto Subdivision;
6. The Hillcrest TTC Yards and subway control centre, major seniors' residences, and a hydro transmission line also abut the North Toronto right-of-way;
7. The Lambton Yard, one of the most dangerous rail sites is adjacent to west Toronto.

This review of some of the details of the hazards on these critical corridors demonstrates that community safety is a complex subject.



It is not only fears of another Mississauga derailment that concern us. There have been other rail accidents in and near the Metro community since then. It can take only one serious error, one serious mishap, to bring disaster into our midst.

In City Council's view, big reductions in risks will come about ultimately through rail relocation. Your consultants have calculated the probable number of deaths that may occur if nothing is done, and until the risk of death is eliminated, there can be no relief for those who live and work in the hazard and accident zones.

We acknowledge, of course, that the City of Toronto would benefit from relocation — beyond the incalculable importance of securing the safety of our people. Removing the through shipments and train loads would likely free up new residential opportunities along the corridors, for example. Some see opportunities for the use of the available line capacity for another important GO transit corridor.

Your consultants have advised you on the feasibility of alternative routes for these dangerous goods, routes which would provide protection for the public as well as easy access for



emergency response forces and freedom for railways to carry out their transportation mandate.

The Wade report — commissioned by the City of Toronto — together with a further analysis are filed here.

It notes, as you have, that some of these alternative routes would be more costly than others. Our consultants favour the northern route known as C-3 and we note that the Metro staff paper also favours that route. It is medium-priced and includes multiple tracks as well as two layover yards and a completely new marshalling yard for CP Rail, to replace its yard in Agincourt.

The capital cost has been estimated at some \$700 million, including \$228 million for the marshalling yard. This total would be less than one-half the cost of the most expensive alternative before you, which would be about \$1.7 billion.

Your consultants have expanded on what has to be done. They have demonstrated that simply patching up the existing downtown system will be costly--\$200 million--and will not create significant reductions in risks.



We are grateful to the federal government for establishing your Task Force and are impressed by the large volume of material accumulated in your two-year study and search for reasonable solutions.

We look on this Task Force as a means of reducing the time-scale for relocation, since you have dealt with every regional government affected and have assessed their relationship to this important issue. The next step is for the Federal Government to act on your recommendations.

The need for an new rail corridor, a protected corridor to ensure the safety of the public, is clear to me. We realize that securing the land and completing environmental and other assessments will take time. Last July's derailment at Don Mills pointed up the necessity for prompt action in implementing a long-term solution. In the meantime it is imperative that maximum operational safety be in effect on these lines. We are not satisfied that the last word on speed restrictions has been heard. We find it very difficult to accept the findings of your consultant on the safety effects of speed constraints.



In closing we ask that you do not underestimate the seriousness of the hazards facing so many of our citizens. Recent public perception surveys have shown that the public doesn't accept the present status of heavy dangerous commodity flows through the City of Toronto, and supports the concept of a specifically designed by-pass route.

As a final step I wish to list my recommendations on this matter:

1. The City's position is to seek the removal of the hazards facing so much of our population. The Task Force's research provides a unique opportunity for a long-term solution concerning public exposure to potential rail hazards. It seems to us that the overall benefits provided by relocation justify the construction of a "protected rail corridor";
2. Our second concern is maximizing rail operating safety on the existing Toronto network. We recommend that the federal government take the necessary steps to this end, including the permanent installation of a 25 mile

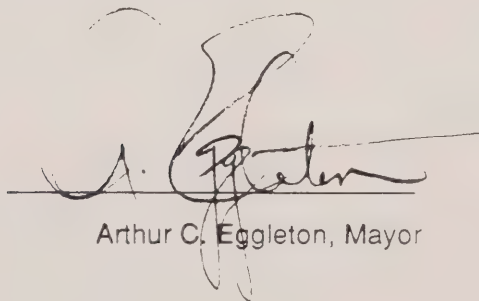


per-hour-limit on dangerous commodity shipments and chemical residue cars on the North Toronto subdivision;

3. The C-3 by-pass route alternative appears to be the best option in terms of both safety gains and cost effectiveness. The City of Toronto will cooperate fully in implementing a new rail network. An essential immediate step is to protect the land requirements of the preferred route.

Let me say, again, that the work of your Task Force is appreciated and we look for positive results.

Thank you.



Arthur C. Eggleton, Mayor



ENCLOSURES



# THE POTENTIAL FOR A MAJOR DISASTER

— Vince Murphy, Commissioner of Traffic - City of North York



Three locomotives and 31 freight cars on a 103 - car train carrying a dangerous chemical jump the tracks on the CP mainline near Don Mills Rd. and Eglinton Ave., on July 14, 1987. Results of Railway Transport Committee investigation still not public after six months. (Photo: Toronto Sun)



**REMOVING A COMMUNITY THREAT**  
**BY**  
**PHILIP E. WADE & ASSOCIATES**



## CITY OF TORONTO

### Presentation to the Toronto Area Rail Transportation of Dangerous Goods Task Force

#### REMOVING A COMMUNITY THREAT

---

In 1979 the City of Toronto petitioned the Railway Transport Committee to take action to reduce maximum rail speeds on the North Toronto subdivision to 25 miles per hour. The Mississauga accident brought home to Toronto citizens the magnitude of the disaster that could have occurred a few miles further east. Since that time the degree of commitment by City Hall to this issue has been demonstrated by the number of resolutions on this subject passed by the Council of the Corporation of the City of Toronto--nine motions, starting in October 1983 when the City Council endorsed the two recommendations of the Burton/Post Report, (i) to direct the flow of special dangerous commodities (SDCs) from the Canadian Pacific North Toronto subdivision to the Canadian National York subdivision, and (ii) to examine the feasibility of railway relocation as a permanent solution.

Some three years later, your Task Force was implemented to deal with this important issue.

The subsequent eight motions dealt with the following concern:



- Requests to the Railway Transport Committee to enforce a maximum speed limit of 25 mph on the North Toronto subdivision for all dangerous commodity carloads.
- Requests to extend this prohibitions to all rail lines in the City and in Metropolitan Toronto.
- Motions supporting the relocation of DC shipments to a northerly rail line and later for the relocation of the North Toronto subdivision to a low-density area.
- A motion authorizing a study of the transportation of DCs in the City of Toronto. Copies of this report released in November 1986, were presented to the Task Force early in 1987.
- A motion authorizing the sending of delegations to Ottawa to express our concerns to the Minister of Transport.

These motions illustrate how this question is a continuing, live issue with the members of our Council. As time goes by, it does not diminish but grows stronger as we learn more about the implications of this subject and the implicit threat it represents to so many of our citizens, some of whom you have heard express their concerns with conviction. As stated in an earlier communication by Council to the



federal authority, the time for action is now, for we are just one accident away from a disaster.

The Task Force reports provide a set of research documents which integrate the varied elements of this complex subject. The generalized but perceptive evaluation of options provides a meaningful comparison of the route-operating plan alternatives. Only a high level of professional competence can reduce such a broad subject to its essential elements.

At the same time we cannot help feeling that this procedure does not permit the type of close, interpretive inspection of hazard as it applies to the varied aspects of life in the inner city. What are the specific and detailed forms of risk affecting the individual citizen, and which are the various factors of hazard applying along specific corridors?

In the City's ongoing investigations of this subject I believe we are developing an understanding of the topic of rail DC transport from the vantage point of community safety. This topic--community safety--must be the main justification for the implementation of suitable rail network revisions. Within the limits of the time available today, I wish to deal with the topic of social hazard in some detail in an effort to clarify its reality in terms of the resident, the employee, the student and so on.



During my presentation I will refer to the various Task Force reports. At this point I wish to focus on one of these--that of Public Perception.

The City of Toronto sits at the center of the largest urban conurbation in Canada with a network of main line tracks and yards adjacent to the heaviest population concentration in the country. In City Hall I deal daily with the public perception of a growing threat from industrial chemicals either in storage or in transit, and often quite apparent to the average person.

What does the public really perceive regarding chemical threats? Within the past year, three surveys of public perceptions regarding rail transport of dangerous goods were carried out: one by the Task Force, one by the City and one by MTRAC. These surveys provide a fairly consistent picture with regard to three specific subjects.

First, the perception of hazard related to the transport of dangerous commodities. The Task Force survey across the Greater Toronto Area (or GTA) recorded a 62% agreement that dangerous goods should never be transported through populated areas.

This issue is at the heart of the City's position.

We recognize that important local shipments of all classes of commodities are necessary for the City's economy and job pool. However, a



proportion of rail freight in Toronto is through traffic. Both the 1986 City Study and the Task Force research established that several thousand carloads of special dangerous commodities annually pass through the City of Toronto and the Greater Toronto Area without any local interface. The routes in question are the most heavily trafficked and pass through the most densely populated corridors. The public perceives what is an unacceptable transport practice--the daily exposure of hundreds of thousands of our citizens to continuous transport of the most hazardous substances.

Second, the Task Force survey revealed a public desire to avoid transferring a specific hazard from one community to another. This has been and is a key City policy--not to transfer our problem to someone else's back yard.

Thirdly, the City and MTRAC surveys demonstrated that the public supports the concept of a rail corridor specifically designed to reduce DC rail hazards to an insignificant level (i.e. that of the threat of lightning), and the transfer of DC shipments to such a bypass route. As well, they approved the commitment of local tax revenue for this purpose. This mirrors another City policy--the promotion of a suitable and protected bypass route.

The results of the additional surveys plus the advice of recognized marketing specialists provides no justification for the conclusion that "from the public perspective, there appears to be no mandate to engage



in a major new system for the transport of dangerous goods by rail in Toronto." This we believe to be an erroneous interpretation and one that cannot be supported.

In our presentation today we wish to focus our attention on what we see as a subject of paramount importance--the nature and degree of risk occurring within the City resulting from the transport of dangerous goods by rail. This was a main focus of the City report--Hazardous Goods Transportation by Rail in Toronto. The present and future conditions of hazard must provide the justification for any proposed investments in major rail bypasses or rerouting initiatives. Accordingly, we must address the question of how serious the situation is in the areas of densest development that call for remedial action?

The 44 km of rail corridor in Toronto constitutes 6% of the total extent of rail corridors in the Greater Toronto Area. At the same time the City's population is directly exposed to rail facilities representing 31% of the total rail risk potential in the GTA as defined in the Task Force reports.

Our first slide depicts the rail network within the City of Toronto. The 44 km of rail corridor shown provides a wide range of hazard exposure to the corridor populations. For example, the Central Business District has within the potential hazard zone approximately 150 000 daytime employees plus numerous shoppers, tourists, residents, and hotel occupants. The presumed shipments of liquefied petroleum gases



and toxic gases transported across this link, elevated for much of its length, represent a major threat to the heavy present and future concentrations of population.

Another vulnerable area is located along the CN Weston and CP Galt subdivisions in the west end, where the nature of the local population, land use concentrations and street patterns create special difficulties in coping with rail accidents along this corridor.

Nevertheless, serious concerns may be over existing risks at the above sites, the City's main focus for rail DC hazards in Toronto are those routes we refer to as the Special Hazard Sections.

These include those routes indicated on the slide consisting of portions of the North Toronto, Galt and MacTier subdivisions. The heaviest flows of dangerous and special dangerous commodity shipments occur along these links. At the same time, this traffic passes through the heaviest residential population and the most vulnerable neighborhood areas in the GTA.

These routes make up part of the major freight corridors by CP Rail through the Greater Toronto Area. By examining the societal risk estimates from the Task Force's risk assessment report for rail operations across Metropolitan Toronto, it is evident that over 50% of the total risk (in expected fatalities per year) are found along these links. Furthermore, 46% of dangerous commodity carloads are through



trips and divertable, including 82% of special dangerous commodities. The latter SDCs, in our judgment, are the most serious loads, representing the major threat to the community.

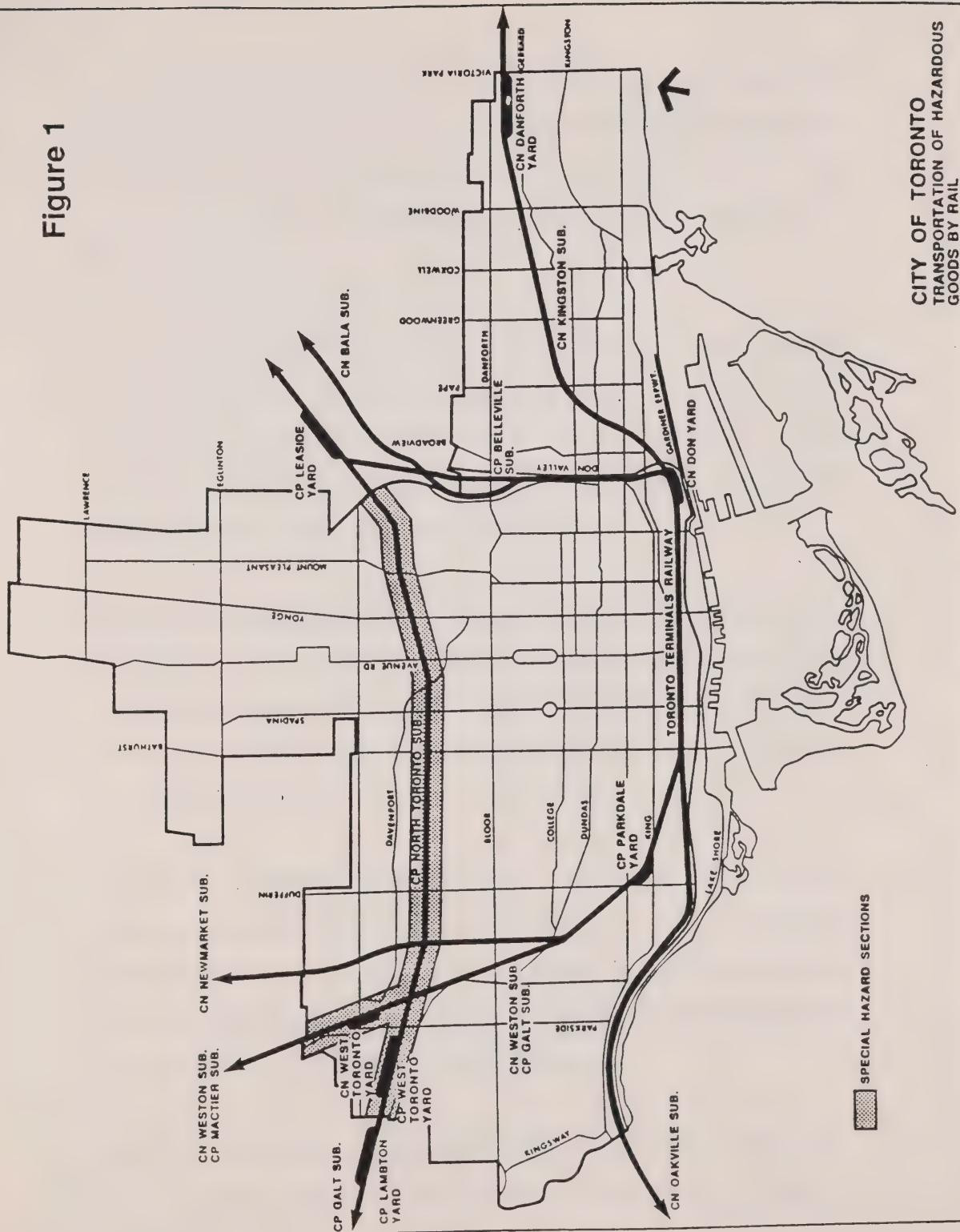
The actual volumes of hazardous goods traveling on these lines were estimated in our study as being:

- the Galt subdivision (west end) - 75 DC carloads per day, 17 SDC carloads per day,
- the North Toronto subdivision - 40 DC carloads per day, 11 SDC carloads per day,
- the MacTier/Weston Corridor (north west) - 70 DC carloads per day, six SDC carloads per day.

In the following discussion I would like, as graphically as possible, to describe the reality of the existing threat to the population in the vicinity of the Special Hazard Sections. A total of 131 000 persons reside in the consequence or hazard zones of what the City study and the Task Force data have indicated as the Special Hazard Sections within the City. This represents over 20% of the total City population. Of this 131 000, a total of 33 000 are located within the high consequence zone of three rail lines. That is, a population of a good-sized community is directly exposed to the most hazardous rail sections in the Greater Toronto Area.



Figure 1



CITY OF TORONTO  
TRANSPORTATION OF HAZARDOUS  
GOODS BY RAIL



At City Hall we recognize the special and serious problems experienced by occupants of the Junction Triangle, and although they are by no means confined to rail operations, there is no doubt that the heavy daily flows of dangerous commodities by rail add to the potential for neighborhood disaster.

I imagine you have some familiarity with the conditions in the adjacent corridors along the Galt, MacTier and North Toronto subdivisions between Runnymede Road and Governor's Road Bridge. There are 131 000 residents, 52 000 employees, 22 000 school children, and 1300 hospital occupants located in these potential hazard areas.

Medium to high-density housing is found abutting the rail rights-of-way which, for much of its length, is elevated several feet above the adjacent ground. This ensures that in the case of a release of a toxic or flammable gas or liquid, these would settle rapidly in the adjacent areas.

The Bloor, Yonge and Spadina Subways are located in the hazard exposure zones with grades several feet below that of the railways. The TTC expresses grave concern over the possibility of the natural flow of hazardous substances into the subway wells thereby threatening the safety of hundreds of subway passengers.

At about 100 feet south on the downhill side of the North Toronto subdivision lies Dupont Street, which for much of its length has shopping



and other public facilities plus a TTC street car and trolley bus line. A sudden spill would find the daytime occupants of this area caught unawares with little opportunity to escape.

At Bathurst Street, directly abutting the North Toronto subdivision, the TTC has its main headquarters, from where most operations are controlled.

Just to the west lies Lambert Lodge, a major residence for 800 senior citizens, for whom evacuation would undoubtedly create difficulties.

For much of the length along this corridor, the CP shares its right-of-way with a major hydro transmission line, highly vulnerable to disruption in the instance of a derailment.

Much of this corridor's length is located within a catchment basin, a local depression which would retain any dangerous gas or liquids released in the area.

While recognizing the high safety standards of rail operations, we are also aware that risk levels along these corridors are ten times or more higher than in most corridors in the GTA. An accident and spill that would be of little consequence in many locations could have devastating and tragic effects along this corridor because of the conditions described above.



School Safety is another important factor. Twenty-one public schools and eight separate religious schools exist within the hazard zones of the Special Hazard Sections. In 1987, the City of Toronto Board of Education, carried out a study of public schools in Toronto and their vulnerability to dangerous commodity mishaps by rail. This study designated that 20 out of 160 public schools are exposed to maximum hazard in terms of rail operating conditions, potential risk levels, topography, evacuation facility, and student body characteristics.

Of these 20 maximum hazard schools, seven are located in the consequence zone of the Special Hazard Sections. These represent over 2000 students and staff, about 200 of which have special evacuation handicaps. Three of these schools have been designated as within the most seriously threatened category in Toronto. These schools experience such problems as: direct right-of-way exposure, location in catchment basins, serious evacuation obstructions and student disabilities. At least one separate school exists in this category.

By virtue of its wide mandate, the Task Force has used as its main safety criteria, the Societal Risk Rate expressed in terms of fatalities per year per kilometer. This factor provides a dramatic measure of relative hazard among the many rail segments in the GTA. I believe you will agree that there are many other significant aspects of community safety. For example, in the case where trains are traveling within 50 to 100 feet of adjacent land uses, such factors as personal



injury and property damage are probable when several car loads derail on an elevated embankment.

As recorded in the Task Force reports, the Railway Transport Committee has documented the relative incidence of fatalities, personal injury and property damage as follows (Table 8.2, Serious Collisions and Derailments 1984-1986, Canadian Transport Commission, 1987):

	<u>Per Annum</u>
fatalities	1.33
personal injuries	8
property damage	\$19,970,000

These, of course, reflect the prevalence of rural rail travel and in no way depict the potential for destruction along the North Toronto corridor, but they do indicate the order-of-magnitude differences between these factors which, of course, do not include other accident impacts, such as: environmental damage, disruption to industry, evacuation, other disruption costs, etc. As the railways well know, an accident along these corridors can impose major costs on the community and on industry.

If we use the above understated numbers, based upon the societal risk for the Special Hazard Sections (including the risk effect of the Lambton Yard which abuts the City boundary) of about one fatality per



year we can forecast a level of six personal injuries and property damages of \$15,000,000.

Another important hazard factor we wish to deal with is the subject of uncertainty. Several matters leave us with some confusion and more concern.

First, the question of future traffic patterns. The general consensus is that the frequency and amount of rail freight movements of DCs are not expected to increase. However, within a constant total, many variations can occur. For example, between 1980 and 1985 CP experienced a major drop in flammable liquids carried and a similar increase in corrosive substances. Might we not see similar shifts in the future with the result that we may find large volumes of newly carried hazardous goods appearing unexpectedly.

New chemical products are being developed daily. Industry has indicated a preference for the use of rail in carrying the most dangerous goods because of the significant safety advantages of rail operations. Levels of SDC traffic by rail can be expected to increase in the future. As a result corridor hazard levels will likely increase accordingly.

Secondly, the subject of multimodal containers. These are expected to increase in number but are not subject to the same structural standards as tank cars. Will they contribute to an increase in risk levels?



Thirdly, the somewhat uncontrolled situation concerning the storage of hazardous commodities off rail rights-of-way. Consequently, the fire departments or emergency forces may not be fully informed as to what is stored where, leading to possible confusion during emergency response. The Special Hazard Sections represent a particularly high concentration of such storage sites.

Fourthly, in the case of rail right-of-way security, it is admittedly not possible to prevent trespass and/or possible vandalism on rail lines in urban areas.

And finally, with respect to emergency measures forces, the Task Force report on this subject indicates that all is not as it should be with respect to coordination and availability of forces responding to emergencies such as railway accidents.

The above matters do not lend themselves to precise quantification. However, there is enough uncertainty in each case to indicate a distinct possibility for worsening the complex hazard picture along the Special Hazard Sections. As a result of one or more of the above uncertainty factors, the probability and consequences of Rail DC accidents could be increased.

The foregoing discussion has attempted to present to you a picture of risk and hazard that affects the lives of hundreds of thousands of



citizens in Toronto, with particular focus on the Special Hazard Sections in the east-west corridor across the northern reaches of the City. In summary, we can say:

1. That the subject of community hazard from rail transport is a much more complex one than the Task Force reports would indicate. An examination of these complexities, however cursory, presents a more alarming picture of community hazard than generalized factors imply.
2. Essentially, the City's position is that at present and in the foreseeable future barring significant change), major DC and SDC flows will occur along corridors where adjacent community conditions are particularly vulnerable to the effects of rail DC accidents.

We believe that the conditions are critical along the Special Hazard Sections, and that effective measures are called for to bring about a significant decrease in rail hazard along these corridors.

The foregoing has presented a negative picture of serious hazard in these areas of the City of Toronto. Conversely, I would like to bring to your attention certain benefits that are likely to accrue if what we sincerely desire takes place, that is, the removal of through dangerous commodity shipments from rail corridors in Toronto.

Firstly, alleviating the costs of restricted property development. The City recognizes the dangers inherent in permitting high-density land uses close to rail lines carrying heavy DC volumes. Opportunities



exist for rezoning properties along the Special Hazard Corridors. Accordingly, the City sees the need for criteria to control any encroachment along these routes that would increase hazard levels. The Government of Ontario is currently examining possible guidelines for municipalities confronted with such issues. There are obvious costs and losses associated with such a program. Conversely, where rail traffic consists largely of local transfer movements, severe restrictions on adjacent land uses would be unlikely since risk levels will be minimized. Such benefits to the municipality are difficult to predict with accuracy, but could be sizeable over a period of time. In a sense this is recovery of developable land.

Secondly, the enhancement of passenger transportation services. Peel Region is one of the fastest growing large urban municipalities in Canada. With a manpower surplus in Peel and a growing labor shortage in Metro, there are 50 000 commuters crossing Etobicoke Creek from Peel daily. With a diversion of trains from the corridor of the Galt/North Toronto/Belleville subdivisions, its use for GO Train service would be highly appealing. This service would primarily feed both the Spadina Subway (accessing downtown) and the Yonge Street Subway (serving areas north of Wellesley Station) plus destinations east of Yonge Street in Don Mills, Scarborough and Markham. Such a passenger function would relieve peak-hour road facilities across the GTA and improve the overall balance of the passenger network. These rail lines represent a high-quality two-track service with considerable capacity for passenger



trains. Such a development would undoubtedly add to the savings estimated for improved commuter rail services.

The foregoing is intended to provide an enhanced picture both of hazard conditions existing along the Special Hazard Sections and of important benefits from rerouting and relocation, which I believe have not been considered to date. The hazards existing along these corridors represent the most severe level of total rail hazard within the GTA. These dangers, which reflect both tangible realities and uncertain prospects, threaten a community the size of Halifax. The obvious benefits from relocation, covering both safety and economic gains would go far to justify the necessary expense.

The main focus of the Task Force's researches has been on Remedial Measures, that is, how we can improve safety and minimize risk. The Task Force's studies have dealt with both route-operating plan alternatives, and specific levels of railway technology, the latter dealing with the means of improving the safety of existing rail operations. Does this latter subject represent an opportunity to achieve significant improvements in rail safety?

This topic is of great interest to the City because; if a bypass become an approved policy, it will still be necessary to optimize existing operations until diversion finally occurs, a likely interim period of several years. Further, if no bypass is approved,



it will be necessary to establish an optimally safe operating plan for the existing rail system.

Experts in this field report that over the past ten years, remarkable levels of improvements have occurred in rail services--cars have been retrofitted, dispatching and train control has been centralized and automated, high tech monitoring devices are in place. The expert opinion is that local rail systems are state-of-the-art in worldwide terms, a finding that is gratifying to all. The overall conclusion is that although improvements are always possible, the industry is definitely on the downward slope of diminishing returns from safety benefits in relation to cost. We haven't gone as far as we can go, but we are getting there.

Two findings of the Task Force studies are surprising.

First, that the A1T route/operating alternative is not cost effective. This implies that the advanced train control systems that we have heard so much about are very expensive for the incremental safety improvements expected.

Secondly, even more surprising is the conclusion that rail hazards do not increase directly with increasing train speed. This is a critical finding that could influence rail operations in cities across the country. We understand, however, that other data sources and research have produced different results. I am sure that the Task



Force will not wish to make any definitive recommendations before all the available evidence has been reviewed carefully.

If we conclude from the evidence provided by the Task Force that little can be done to significantly improve the safety of existing rail operating practices and technology, then we must hitch our wagon, so to speak, to the optional strategy of rerouting or relocating the rail flow of dangerous goods.

The Task Force has examined numerous corridors and operating options in its quest for the optimal solution.

Before presenting the City's comments on such alternatives, I wish to document the City's basic policy goals on this subject as follows.

The City report on hazardous goods transportation concluded with 28 specific recommendations to be forwarded to the relevant authorities. The City, however, has focused its recommendations to higher levels of government toward the following three topics:

- The removal of DC rail traffic to a safely-designed route bypassing the GTA.
- Recommending against removal of DC rail traffic to other municipalities without adequate safeguards to minimize or eliminate community hazard.



- To maintain DC rail traffic within the City at an adequate safe speed.

A significant finding of the Task Force's evaluation is that the B options of the relevant route-operating plan options are no longer valid as locations for a protected transportation corridor. These options involve the use of portions of the CN Halton/York subdivision and the Provincial Parkway Belt. It was originally intended that these facilities would constitute protected corridors but urban encroachments have made this impossible. This indicates the need for strong and effective legislation to protect a corridor in a low-density zone.

The systemwide decreases in Societal Risk levels indicates a relatively low safety gain for the Parkway Belt alternatives, both in absolute terms and in relation to cost increases.

It is only when we move route alternatives beyond the limits of urbanization that we appear to be able to achieve significant levels of community safety. Option C3 at first glance appears to achieve desirable safety gains at a relatively low cost.

There are undoubtedly other costs and impacts which are not quantified: for example, shipment diversions to truck, extra truck distribution costs, and so on. Such an option could possibly serve as a second parkway belt, and act as a key component in any provincial policy limiting the extent of urban growth, and preserving prime farm land.



Our inclination at this point is to favor the C3 option which, if accepted by the authorities, would receive the full support of the City of Toronto.

As a final step, let me recap what we see as our major goals or recommendations.

1. Don't underestimate our understanding of the seriousness of the hazards facing so many of our citizens. This hazard is to us an unacceptable condition, and its removal is a cause that we at City Hall are committed to.
2. We have no doubt that the benefits caused both by the removal of hazard and the enhancement of passenger services and property development justify, for Toronto and our neighbors in the GTA, the relocation or rerouting of relevant traffic. This latter option, in our opinion, in order to justify the heavy investments, must include both through DC and non-DC shipments.
3. We recognize the necessity for the continued functioning of the North Toronto subdivision for the passage of both local transfer and passenger trains, thus ensuring its existence as a key transport link in the GTA network.



4. We don't wish to transfer the level of hazard from our community to another municipality without ensuring that risks will be lowered to an acceptable level in the new corridor. The C3 bypass route alternative appears to us to be the option with the best overall advantage in terms of both safety gains and cost effectiveness.
5. Whatever the relocation or rerouting option selected, you will find the City of Toronto highly supportive and committed to its implementation.

In closing, I would like to pay tribute to the expert research carried out by the Task Force and its consultants. Nevertheless, we find the generalized numbers of network risk to be somewhat cold and unconvincing, with little feel and flavor of the hazards presently experienced by hundreds of thousands of our citizens. You may find the various public spokesmen for City areas to be excessively emotional on this issue. However, the reality inspires emotion. When you sit in a garden and see and hear a freight train passing by a short distance away and a few feet above you, you find the experience akin to having a jumbo jet or an ocean tanker in your neighborhood. It is both impressive and alarming.

Gentlemen, your statistics don't provide the true picture. The reality that we in Toronto have to live with is that the heaviest DC volumes pass through those areas of greatest vulnerability. An accident along



these corridors would cause a disastrous experience that we and our descendants would never forget.

I speak for Toronto when I say that we will never cease in our efforts to remove this threat from our community.

January 12, 1987.



**CONSOLIDATION OF CITY COUNCIL RESOLUTIONS  
REGARDING THE TRANSPORTATION OF  
DANGEROUS GOODS BY RAIL**



RESOLUTION ADOPTED BY CITY COUNCIL AT ITS MEETING

HELD ON AUGUST 10 and 14, 1987

"WHEREAS a serious accident took place on the C.P. North Toronto Subdivision on July 14, 1987, involving the derailment of some 31 cars and three locomotives;

AND WHEREAS this train carried a dangerous product known as vinyl acetate which can have serious consequences for human life;

AND WHEREAS it is known that the train was moving at a speed of 40 miles per hour or thereabouts;

AND WHEREAS a temporary reduction on speeds of dangerous goods trains on the North Toronto Subdivision between the West Diamond and Leaside will be eliminated by the rail company next March;

AND WHEREAS the City of Toronto and other communities of Metro Toronto have called for the removal and relocation of the North Toronto Subdivision, which may take years to accomplish;

AND WHEREAS the evacuation of residents is likely to be difficult in the event of a serious derailment and chemical spill in the downtown area, not only in the City of Toronto, but in other high-density areas of Metro Toronto;

AND WHEREAS the City of Toronto requires protection against the movement of dangerous goods by rail through the busy-downtown thoroughfares;

THEREFORE BE IT RESOLVED THAT:

1. The Federal Minister of Transport be requested to lower the maximum speed of dangerous goods trains in the high density Metro area to 25 miles per hour;
2. The maximum speed be enforced by law or regulation; and
3. The process of relocating the North Toronto Subdivision be accelerated.



RESOLUTION ADOPTED BY CITY COUNCIL AT ITS MEETING

HELD ON JUNE 15 and 19, 1987

That City Council:

1. Reaffirm its support of the principle of relocating the Canadian Pacific North Toronto Subdivision Line in a low density area, thereby avoiding the extreme difficulty of evacuation which exists in the downtown core of the City of Toronto.
2. That the Federal Government enact regulations, as soon as possible, to enforce reduced maximum speeds for trains on Canadian Pacific's North Toronto Subdivision Line carrying dangerous goods and special dangerous goods, presently in effect on a voluntary basis.



RESOLUTION ADOPTED BY CITY COUNCIL AT ITS MEETING

HELD ON JANUARY 12, 1987 \*

We wish to make the following recommendations concerning the further analysis and deliberations of the Toronto Area Rail Transportation of Dangerous Goods Advisory Council.

- (w) That a prime objective of the Task Force's research should be to establish a long-term or permanent solution concerning public exposure to rail transport of dangerous commodities, possibly in the form of a protected rail freight corridor. A protected corridor should be of suitable width and/or contour to protect adjacent communities from DC incidents.
- (x) That the rerouting options described in Chapter 3 of this report be considered for possible intensive assessment.
- (y) That the overall justification and necessity for a major rerouting option be determined. This would include, in addition to operational and capital financing, the economic costs of current DC traffic levels in terms of land development and public hazard impacts, plus impacts upon industry in Toronto.
- (z) That bypass plans be assessed in relation to an overall rail risk management program in the Toronto CMA.
- (aa) That the feasibility and impacts be assessed of a possible ban on through DC/SDC shipments by rail in the City of Toronto.
- (bb) That the 25 mph speed limit be examined to determine whether it produces significant improvements in operational and public safety relative to the 35 and 50 mph limits now in force.

\* The above recommendations are those which were forwarded to the Federal Task Force as part of the City of Toronto's original submission. These recommendations are only a part of the larger set of recommendations which were approved at the Council meeting held on January 12, 1987, when Council approved its consultant study entitled, "Hazardous Goods Transportation by Rail in Toronto- A Strategic Overview". For complete reference to this study and all of its recommendations, see the attached copy which has been included with this submission.



RESOLUTION ADOPTED BY CITY COUNCIL AT ITS MEETING

HELD ON JULY 18, 1986

WHEREAS the downtown core of the City of Toronto is exposed to the possibility of a catastrophe through the haulage of dangerous goods by rail on the Canadian Pacific North Toronto Subdivision; and

WHEREAS this warning of the potential for catastrophe has been documented by a study of the Canadian Transport Commission known as the Burton-Post Report; and

WHEREAS this flow of dangerous goods on the North Toronto Subdivision continues to increase year by year following the Mississauga derailment of 1979; and

WHEREAS the Burton-Post Report recommended relocation of the North Toronto Subdivision as a possible permanent solution; and

WHEREAS the Council of the Municipality of Metropolitan Toronto on October 25, 1983, did unanimously vote in favour of relocation of the North Toronto Subdivision; and

WHEREAS the Government of Canada has established a Task Force to study the feasibility of such relocation and has called on the Municipalities in Metropolitan Toronto to voice their opinions on this matter;

THEREFORE BE IT RESOLVED that the City of Toronto hereby renews its support of the principle of relocating the North Toronto Subdivision in a low-density area, thereby avoiding the extreme difficulty of evacuation which exists in the downtown core of the City of Toronto.



RESOLUTION ADOPTED BY CITY COUNCIL AT ITS MEETING

HELD ON FEBRUARY 24 and 28, 1986

"Whereas City Council and Metro Council in 1983 unanimously supported the reduction in the maximum speed limit of trains carrying dangerous commodities through urban areas to 25 miles per hour (40km/hour) and communicated this to the then Minister of Transport; and whereas City Council at its meeting held on January 27, 1986, adopted the recommendations contained in Clause 34, City Services Committee Report No. 2, as amended, including the recommendation that Mayor Eggleton head a delegation to Ottawa to present the City's case, and that the City of Toronto make representations to the Railway Transport Committee of the Railway Transport Commission to urge a speed limit of not more than 25 miles per hour (40 km/hour) on the North Toronto Subdivision Lines which run for 13 miles from Lambton Station on the west to Agincourt on the east; and whereas the Minister of Transport, The Honourable Don Mazankowski, has agreed to amend Section (3) of the National Transportation Act to include the word 'safety' so it has equal priority along with economic benefits; and whereas over the last several weeks there have been approximately one dozen serious rail accidents/derailments involving the loss of many lives and the destruction of cargo and equipment valued in the hundreds of millions of dollars; and whereas had one of these derailments occurred in a built-up urban area such as downtown Toronto the repercussions would have been a hundredfold worse;

therefore be it resolved that City Council request the Mayor, any other interested members of City Council, two resource persons from M-TRAC, and the Executive Director of the Federation of Canadian Municipalities to immediately attend Ottawa to petition The Honourable Don Mazankowski, Minister of Transport, to initiate immediate action on the part of the Canadian Transport Commission to reduce the maximum speed of all trains using the C.P. North Toronto Subdivision lines to 25 miles per hour (40 km/hour); that the necessary funds in the amount of \$247.20 per person be provided from the Contingency Account; and further that a grant in the amount of \$494.40 be made to M-TRAC to permit the two resource persons to join the delegation to Ottawa, that the grant be deemed to be in the interests of the municipality, and that the necessary funds for this purpose be provided from the Contingency Account."



RESOLUTION ADOPTED BY CITY COUNCIL AT ITS MEETING

HELD ON JANUARY 27, 1986

1. that recommendations 1, 2, 3, 4, and 5 contained in Section 5 (5.2) - Summary of Conclusions and Recommendations, Page 23, Volume 1, Noise and Vibration Studies - Wards 5 and 10, not be proceeded with at this time;
2. that the City of Toronto make representation to the Railway Transport Committee of the Railway Transport Commission to urge a speed limit of not more than 25 miles per hour on the North Toronto Subdivision lines which run for thirteen miles from Lambton Station on the west end to Agincourt on the east;
3. that the City of Toronto request support for the 25 miles per hour speed limit from the other five Metropolitan area municipalities;
4. that the Commissioner of Public Works investigate and report to the City Services Committee on how speed restrictions were effected on the CPR main line in other urban areas such as Winnipeg and Vancouver and recommend actions that City Council could undertake to achieve similar reductions in train speeds;
5. that the Commissioner of Public Works monitor the speed of all trains on a continuous basis (by an automatic monitoring device if feasible) and that such monitoring include full reporting on train speeds from midnight to dawn;
6. that City Council request the Federal Government to relocate the CPR main line (or at least a line for the through transit of hazardous products) north of Metropolitan Toronto and away from population centres, as recommended by the Municipality of Metropolitan Toronto on October 25, 1983;
7. that the Commissioner of Public Works report to the City Services Committee on the allocation of funds to implement the foregoing recommendations;
8. that Council request the Canadian Pacific Railway to participate in the study being coordinated by the Commissioner of Planning and Development;
9. that the Commissioner of Public Works report to the City Services Committee as soon as possible on erecting a sound barrier instead of the existing fence on the north side of the CPR tracks west of Osler Street for a distance of approximately 100 metres, and also comment on whether a similar barrier would be useful on the south (Ward 1) side of the CPR track;
10. that the Commissioner of Public Works report to the City Services Committee as soon as possible on erecting a sound barrier on the CNR section along Wildwood Crescent, west of Woodbine Avenue, running at-grade, and the cost of same;
11. that the foregoing recommendations be forwarded to the Technical Advisory Committee formed in connection with the study of transportation of dangerous commodities by rail.



RESOLUTION ADOPTED BY CITY COUNCIL AT ITS MEETING

HELD ON OCTOBER 17, 1983

1. Consideration be given to diverting the flow of special dangerous commodities off the Galt and North Toronto subdivisions of CP Rail, and rerouting them along the York subdivision of CNR; such rerouting will require the making of some new connections between CN and CP tracks. The feasibility of this rerouting should be examined as a matter of urgency by the Canadian National and Canadian Pacific Railways.
2. The rerouting of special dangerous commodities would substantially reduce the present level of risk, but it is only a palliative and temporary measure. It is suggest that the interested parties initiate an examination of the possibility of railway relocation so that new routes may be provided to permit the transport of dangerous commodities around population centres.



**DRAFT REPORT  
TO  
METRO TRANSPORTATION COMMITTEE**



December 21, 1987

## METROPOLITAN TRANSPORTATION COMMITTEE

### Transportation of Dangerous Goods by Rail Within the Metropolitan Toronto Area

File: 100

#### Recommendations:

It is recommended that the Council of Metropolitan Toronto, in conjunction with the six Area Municipalities (Cities of Etobicoke, York, North York, Toronto, Scarborough and the Borough of East York) forward the following position to the Federal Task Force concerning the transportation of dangerous goods within the Metropolitan Toronto area:

- (1) that the Federal Government make an immediate decision to relocate (remove) dangerous goods rail traffic presently using the CP North Toronto rail corridor to a new rail corridor outside of Metropolitan Toronto. In this regard, the preferred new route is the C3 option of the Northern Line alternative;
- (2) in the event that the Federal Government decides that it cannot proceed with such a project at the present time, then a commitment should be made to protect a future new rail corridor outside of Metropolitan Toronto. In this regard, the preferred new route to be protected should be the C3 option of the Northern Line alternative;
- (3) whether or not an immediate decision is made regarding the construction of a new rail corridor, substantial efforts should be made by the Federal Government to:
  - (a) further examine and implement operational and safety improvements which do not require extensive capital funding on existing rail corridors within Metropolitan Toronto;
  - (b) advise municipalities what actions will be undertaken and how these actions are intended to reduce risks;
  - (c) effectively monitor rail safety and operational improvements, as well as any new rail regulations to be implemented to determine whether they will be beneficial;
  - (d) coordinate the development of policies and procedures for emergency preparedness so that municipalities have the resources, experience and ability to deal with dangerous goods rail disasters;



- (e) assume the responsibility for funding municipal emergency response programs, particularly towards offsetting resource costs (personnel, equipment, etc.);
- (f) provide more information to the public pertaining to the risk of dangerous goods shipments by rail;
- (g) maintain the voluntary 25 m.p.h. maximum speed limit for trains carrying dangerous goods or commodities until further analysis is undertaken with respect to the specific conditions related to the CP North Toronto rail line; and
- (h) retain cabooses on trains transporting dangerous goods or commodities through the Metropolitan Toronto area.

#### Introduction:

At a special meeting of the Metropolitan Transportation Committee held on Monday, December 7, 1987, the Chairman and the consultants of the Toronto Area Rail Transportation of Dangerous Goods Task Force (Federal Task Force) gave a slide presentation and oral report on the results of the investigations for the transportation of dangerous goods in the greater Metropolitan Toronto area.

This consultative session was part of Phase II of the Federal Task Force's "public consultative program" held during December 1987 and January 1988, to provide information to the public and their elected representatives in the greater Metropolitan Toronto area and to provide the opportunity to comment on the findings of the consultants commissioned by the Federal Task Force. The Federal Task Force has requested that public and municipal comments be submitted early in January 1988, since the Federal Task Force has a mandate to present its recommendations to the Federal Minister of Transport by March 1988.

The Federal Task Force requested that it would be preferable if Metropolitan Toronto submitted its comments together with the area municipalities as a joint response. This report has been prepared on this basis.

#### Background:

##### (1) Federal Task Force

The Federal Task Force was established by the Federal Minister of Transport basically to assess alternative routes and operating strategies that would reduce the level of risk for the rail movement of dangerous goods through the greater Metropolitan Toronto area.

The greater Metropolitan Toronto area is defined to include the Regional Municipalities of Durham, York, Halton and Peel, and The Municipality of Metropolitan Toronto. Five regional governments and some 30 municipalities are involved, emphasizing that the problem does not belong to any one particular location but rather affects the whole area.



(a) Terms of Reference

On March 14, 1986, the Federal Minister of Transport commissioned the Federal Task Force to:

- (i) determine the feasibility of rerouting or relocating the rail flow of dangerous commodities away from densely populated areas in the greater Metropolitan Toronto area;
- (ii) examine ways and means of improving safety on both the existing railway system as well as on any feasible rerouted or relocated option; and
- (iii) examine the matter of speed limits on trains containing special dangerous commodity cars.

Although an examination of feasible alternative routes was undertaken, the Federal Task Force has no mandate for implementing any of its findings (i.e. constructing a new route or implementation of operational changes).

(b) Task Force Members

The seven members are: Mr. Harold F. Gilbert (Chairman); Mr. Glenn Swanson, V.P., CP Rail; Mr. Brandon Buchanan, Assistant General Superintendent, CN Rail; Mr. Harold Morrison, M-TRAC Chairman; Mr. Robert Maksymec, President, Planmac Consultants Ltd.; Mrs. Anne Clark, Esso Petroleum Canada; Mr. Richard Puccini, Executive Director, Municipal Planning, Ontario Ministry of Transportation. Both Mrs. Clark and Mr. Maksymec represent the public at large.

(c) Studies

The Federal Task Force commissioned eight consulting firms to work together on various aspects of the problem. A list of technical studies and a brief description of their terms of reference is appended as Exhibit 1.

(2) Previous Metropolitan Council Involvement

- (a) Clause No. 1 of Report No. 17 of The Transportation Committee (1986), as adopted by the Council of The Municipality of Metropolitan Toronto at its meeting held on January 20, 1987:

This report embodies a joint response by The Municipality of Metropolitan Toronto and its six Area Municipalities to the Federal Task Force, requesting that dangerous goods rail traffic on the CP North Toronto rail line be relocated to a newly created line outside of Metropolitan Toronto, that trains



transporting dangerous goods be limited to a 25 m.p.h. speed limit, and that monitoring strategies and regulations involving train traffic involving dangerous goods be improved to minimize the level of risk to the public. This report is appended as Exhibit 2.

- (b) Clause embodied in Report No. 22 of The Metropolitan Executive Committee, as adopted by the Council of The Municipality of Metropolitan Toronto at its meeting on September 16, 1986:

This report reconfirms previous Metropolitan Council positions that the rail flow of dangerous goods be relocated outside of Metropolitan Toronto and away from densely populated areas and is appended as Exhibit 3.

- (c) Clause embodied in Report No. 13 of The Transportation Committee, as adopted by the Council of The Municipality of Metropolitan Toronto at its meeting held on October 25, 1983:

This report requests that in addition to improving rail safety practices and regulations in general, the Railway Transport Committee proceed forthwith to find and implement a new rail route to be constructed for transporting dangerous goods, as suggested by the "Burton-Post" report. This report is appended as Exhibit 4.

#### Comments:

##### (1) Methodology

The studies undertaken by the Federal Task Force appear to be structured in order to address the following question:

Given that the level of risk can be decreased in some proportion to increasing levels of investment (i.e. in physical plant, land use protection, operational techniques, etc.), what level of risk is considered to be acceptable and what level of investment can be justified to attain this level of risk?

It should be noted that although the work of the Federal Task Force is focussed on the greater Metropolitan Toronto area, the Federal Minister of Transport will no doubt be considering the implications of any final decision for this area in terms of potential application to other major urban centres in Canada. In other words, the financial implications for the Federal Government may go beyond the investment required just for the greater Metropolitan Toronto area.

##### (2) Routes and Operational Strategies

The analytical process employed by the Federal Task Force reduced the number of basic rail corridors under study from a long list of six corridors to three corridors for more detailed study. These corridors, roughly illustrated in Exhibit 5, are:



- Corridor A: the existing system, in which CP dangerous goods traffic moves east-west through the middle of Halton and Peel Regions, midtown Metropolitan Toronto and south Durham Region; and CN traffic moves through north Halton and Peel, south York Region (just north of Steeles Avenue) and south Durham Region.
- Corridor B: the Parkway Belt, within which both CP and CN traffic (dangerous goods and possibly all through freight traffic) would be located. This corridor would utilize existing CN and CP lines, as well as new sections of line where bypasses are provided and where lines of the two railways cross each other. The Parkway Belt was established as a transportation/utility and open space corridor by the Provincial Government of Ontario on an east-west alignment north of Mississauga and Metropolitan Toronto.
- Corridor C: the Northern Line, a new rail line which would follow a more northerly alignment through North Halton and Peel, York Region and north or south Durham Region. The new rail line would be located generally north of major existing and planned urban development.

A number of rail operating strategies were then developed for each corridor and evaluated in terms of safety, community, natural environment, and economic impacts. This resulted in a total of twelve rail route/operating alternative strategies, as defined in Exhibit 6.

A review of the rail route/operating alternative strategies identified in Exhibit 6 makes it obvious from a Metropolitan Toronto perspective that while it would be desirable to relocate CP North Toronto dangerous goods rail traffic to another route, this traffic should not be rerouted to the CN Halton/York rail corridor (Alternative A2). The Parkway Belt corridor alternative options (B1A to B3B) make use of existing CN Halton/York rail segments and this would do little to reduce the risk concerns of the City of North York and the nearby municipalities in the Region of York. The Northern Line corridor alternative options (C1 to C3) appear to be the best investment in terms of lower levels of risk, land use protection, providing better operations to the railways, and accommodating future railway capacity requirements.

Hence, based purely on Metropolitan Council's previous position, Corridor C is the only alternative consistent with this position.

### (3) Societal Risk

The analysis of societal risk, summarized in Exhibit 7, concluded the following:



(a) Corridor A - Existing System

- (i) there is a societal risk of 4.1 fatalities per year (or about 40 every ten years or 400 fatalities likely every 100 years, etc.) on the present rail system (rail lines and yard facilities) within the Metropolitan Toronto region due to the transportation of dangerous goods;
- (ii) the predominant risk (i.e. higher level of societal risk) exists on the central segments of the CP North Toronto (14 per cent. of total societal risk for the region) and CN Halton/York (11 per cent. of total societal risk for the region) rail corridors due to the high density residential development adjacent to the tracks, the tracks being on an embankment for most of the route, almost no existing buffer zone, a major accessibility problem, and a major concern over evacuation;
- (iii) rerouting only CP North Toronto dangerous goods rail traffic to the CN Halton/York line (immediately north of Steeles Avenue) reduces the CP North Toronto central rail segment risk by 97 per cent. but increases the CN Halton/York central rail segment risk by 41 per cent.;
- (iv) with technological improvements (new tracks, improvements to signals, etc.) provided for the existing system, societal risk would only be reduced by 10 per cent.;

(b) Corridor B - Parkway Belt

- (i) relocating only CP North Toronto dangerous goods rail traffic to this corridor would reduce overall societal risk of the rail network by 40 per cent. and 97 per cent. on the central segment of the CP line, but increases the high risk segment of the Parkway Belt by 41 per cent.;
- (ii) overall risk is not reduced greatly by this corridor because corridor alternative options make use of the existing CN Halton/York rail line where specific restrictions exist;

(c) Corridor C - New Northern Line

- (i) relocating only CP North Toronto dangerous goods rail traffic to this new rail corridor would reduce overall societal risk of the rail network from 4.1 to about 1.1 fatalities per year. More significant, however, is the 97 per cent. reduction in the level of risk in the central rail segment of the CP North Toronto line;
- (ii) relocation of CN Halton/York dangerous goods rail traffic to this new corridor would reduce overall risk by 95 per cent. on the existing central rail segment of this line.



Based on these facts, the new Northern Line appears to be the best alternative in terms of reducing average risk and also significantly reducing the present high risk sections of the CP North Toronto and CN Halton/York rail lines.

The consultants used the approach that the loss of life measurement can be viewed as a surrogate for all impacts of a rail accident including sub-lethal impact effects. To place these levels of risk in perspective, the consultants compared such risks with other inherent risks in daily life (see Exhibit 8).

(4) Questions Re: Analysis

(a) Calculation of Risk

Concerns with the methodology used by the Federal Task Force consultants are:

- (i) no projections were made of the overall growth of rail traffic and of the growth of dangerous goods traffic and new dangerous goods that may come to the market in the future. The absence of these projections implies that the calculated absolute value of risk is underestimated and perhaps the relativity of risk values between options is skewed;
- (ii) the risk analysis is measured only in terms of lives lost and does not consider sub-lethal impacts:
  - number of injuries
  - property damage
  - other effects (e.g. contaminated soil, etc.)
  - long-term health effects and costs
  - municipal costs

The absence of this information makes it difficult to assess the true worth of reducing societal risk.

Examples of these are as follows:

- |                      |   |
|----------------------|---|
| Round Rock, Texas    | - December 14, 1987                       |
|                      | - evacuation of whole town (5,000 people) |
|                      | - environmental damage                    |
|                      | - \$ cost not available                   |
| Mississauga, Ontario | - November 1979                           |
|                      | - no lives lost; \$80 Million cost        |
|                      | - most of city had to be evacuated        |
| Hinton, Alberta      | - February 1986                           |
|                      | - 23 lives lost; \$15 Million cost        |
|                      | - environmental damage                    |



Livingston, LA, U.S.A. - 1982

- 19 buildings destroyed
- considerable environmental damage (contaminated soil along a three mile corridor had to be removed)

Other examples:

- Cambridge, Ontario
- Parry Sound, Ontario
- Don Mills, Ontario (July 1987)

- (iii) the risk associated with rail transport of dangerous goods should only be compared with other modes of transport; and
- (iv) the average "system societal risk" figure established masks the specific effect of the high risks that exist on specific segments of rail corridors, such as through the central area of Toronto on the CP North Toronto line.

Other aspects that appear to have been excluded in the consultants analysis are:

- o the consequences of non-dangerous goods, such as lumber or box cars, can be just as dangerous in a derailment should these cars strike a hydro tower, hydro sub-station (where PCB's may be involved), or propane tank facilities near trackside;
- o chemical residue cars;
- o the consequences of a "chemical soup" situation, the combination of major chemicals such as propane and chlorine, which can result in different chemical mixtures that must be contained by emergency forces;
- o the problem with container cars such as acetates, and the consequences when this chemical is mixed with other dangerous goods; and
- o the problem with leaking cars (CP, for example, had to deal with 217 leaks across Canada last year).

(b) Risk versus Cost

Exhibit 9 is a useful piece of information developed by the consultants because it provides a plot of the risks of the alternatives versus the costs of the alternatives. From this, it would appear that:



- (i) the alternatives are grouped into three bands. The highest average risk is associated with options within Corridor A while, not surprisingly, the lowest average risk is achieved with Corridor C options (a 50 to 75 per cent. reduction from Corridor A option alternatives);
- (ii) providing technological improvements to the existing CP North Toronto rail corridor provides only a marginal reduction in risk (10 per cent.) for a rather substantial expenditure of \$577 million. Presumably, this same relationship holds true for the other corridor alternatives;
- (iii) what is not highlighted in the consultants' report is the significant reduction in societal risk on specific segments of certain corridors. For example, relocating dangerous goods rail traffic from the CP North Toronto line within the central area of Toronto to a new rail corridor outside of Metropolitan Toronto reduces the risk on that rail segment by 97 per cent. A similar reduction results from relocating dangerous goods traffic from the CN Halton/York corridor;
- (iv) options A1, B1A, and C3 are the lowest cost options for Corridors A, B and C. However, option A1 is the "do nothing" alternative. Option B1A makes use of the existing CN Halton/York line with some modification for new connections. Overall, this option does little in the way of alleviating the concerns of the City of North York and nearby municipalities in the Region of York.

The C3 option appears to provide the most desirable benefits for the cost and appears to be the preferred option based on Metropolitan Council's previous position.

(c) Costs

The cost of land and physical plant for the three corridor alternatives, illustrated in Exhibit 10, range from \$0 for the "do nothing" alternative in the existing system to a high of \$1,686 million for the C2 option of the Northern line alternative.

There are certain questions pertaining to the cost estimates provided:

- (i) certain rehabilitation costs on the existing system may be avoidable. Infrastructure costs, such as the replacement and major maintenance of about 50 bridges are not included in the analysis. The replacement cost of these works ranges between \$250-300 million, and improvements must be undertaken in the 20-50 year analysis period that was considered by the consultants. Ultimately, the railways must make these improvements and this cost should be designated as an avoidable cost, particularly if parts of the CP North Toronto rail line can be abandoned in the Corridor C options, when comparisons are made with other route alternatives; and



- (ii) given that rail traffic will increase, a new rail corridor will provide the opportunity for future expansion. However, if the capacity of the existing system has to be increased to accommodate traffic increases, the retrofitting of an existing line can be proportionately more expensive than providing some additional capacity with a new rail line. Hence, this factor should be taken into account when making comparisons with new rail corridor alternatives.

In the cost factors analyzed, no mention is made of the costs related to municipal expenses for preparation of emergency services required for a rail accident. The consequences will vary in terms of the density of development adjacent to a rail corridor. However, the municipal cost associated with a dangerous goods rail accident within the central area of Metropolitan Toronto, such as on the CP North Toronto line, could be substantial.

And lastly, the capital cost associated with the relocation of rail traffic involving dangerous goods and the creation of a new rail corridor should be evaluated in the context of other major federal and provincial initiatives and projects.

(d) Public Perception Survey

There are uncertainties with the public survey that purported little support for shifting transport of dangerous goods outside the Metropolitan Toronto area. Had a survey sample been undertaken of people residing in close proximity to specific segments of rail corridors within Metropolitan Toronto (i.e. along the CP North Toronto line within the central area of Toronto), then a higher percentage of respondents would have favoured relocation of dangerous goods rail traffic because these people would be more aware of the problem and risk.

(e) Train Speeds

Previous submissions to the Federal Task Force by Metropolitan Toronto, the City of Toronto and other municipalities raised the matter of the severity of the accident that results due to a derailment and that the speed of a train at the time of the derailment can be a contributing factor.

The Federal Task Force consultants' findings agree with this. Yet they postulate that trains are actually less prone to having accidents in the 35 to 45 m.p.h. range than at lower speeds. This relationship based on speed/accident relationships may be acceptable on a national basis but may not be representative when the special conditions of the CP North Toronto line (i.e. terrain, embankment, high density development, etc.) and the cargos (train length, etc.) being transported are taken into account. The location within Metropolitan Toronto where an accident may occur and the type of dangerous goods involved are factors which can contribute to the consequences of an accident.



Until further analysis is undertaken with respect to the specific conditions related to the CP North Toronto line, the speed of trains should be maintained at the present voluntary maximum speed limit of 25 m.p.h.

(f) Emergency Response

The conclusions that can be drawn from the consultants' findings on this topic are that municipalities are not prepared and should exercise greater response for emergency planning and preparedness. Considering that rail transportation comes under federal jurisdiction, given past federal performance in this area, and since the type of cargo being transported is unknown to municipalities until perhaps an incident exists, it would be desirable from all standpoints if the Federal Government were to:

- (i) undertake a leadership role in the preparation aspects for a dangerous goods emergency;
- (ii) undertake responsibility to fund municipal emergency response programs, particularly in Metropolitan Toronto's case where 80 per cent. of all dangerous goods transported by rail are through shipments to locations elsewhere in the country;
- (iii) coordinate the development of appropriate policies and procedures so that municipalities will have the
  - resources (personnel and equipment)
  - experience (knowledge of hazards, emergency response, etc.)
  - abilityto deal effectively with any dangerous goods emergency involving railways; and
- (iv) assist along with the railways, producers, and users of dangerous goods in providing information for the public and municipalities.

For municipal response agencies, this would assist in evaluating how to deal with the problem as well as assess the extent of the rail disaster impact.

(g) Other

The previous joint submission made by the Councils of Metropolitan Toronto and the six Area Municipalities reiterated the concern with caboosless trains. The recent decision pertaining to "caboosless train operations on CN and CP trackage", submitted to the Railway Transport Committee by Commissioner F. J. Walter, recommends that cabooses can be omitted from trains provided certain operational and safety improvements are implemented.



An interesting decision in this document recommends that "where any component or function of an end-of-train-information-system fails en route, the caboosless train shall proceed to the next crew change point at a speed not exceeding 25 m.p.h.".

In consideration of this information, and in view of the terrain, land use adjacent to the tracks, dangerous goods being transported on the CP North Toronto line, it would seem logical to retain the use of cabooses on these trains through Metropolitan Toronto until dangerous goods rail traffic is relocated to a new corridor.

#### Rationale for Conclusions:

Having reviewed the Federal Task Force consultants' findings, there appear to be considerable benefits in relocating dangerous goods rail traffic from the CP North Toronto line to a new rail corridor (specifically the C3 option of the Northern Line alternative) outside of Metropolitan Toronto. Consider that:

- (1) 80 per cent. of all dangerous goods rail traffic transported into Metropolitan Toronto is destined to other locations in the country;
- (2) societal risk on specific segments of rail corridors within the greater Metropolitan Toronto area, such as the CP North Toronto line through the central area of Toronto, is considerably higher than other sections of the system;
- (3) the shift of risk with relocating traffic to a new Corridor C option is significant
  - a 97 per cent. risk reduction on the central segment of the CP North Toronto line; and
  - a 95 per cent. risk reduction on the central segment of the CN Halton/York line;
- (4) the features of the CP North Toronto line through the central area of Toronto are such that there would be great difficulty when having to respond to a Mississauga-type incident. Accessibility to this corridor is of considerable concern. The proposed new rail corridor could be developed and protected so that restrictions of this type would not exist;
- (5) relocation of dangerous goods traffic (or all main-line train traffic, as the case may be) releases capacity for possible commuter rail use and this would provide substantial benefits in the long term for the Lakeshore GO line. There is a limit to operational improvements that can be implemented on the Lakeshore GO line;



- (6) a new rail corridor would not only reduce overall societal risks, but would also accommodate future rail capacity needs as well as provide more efficient rail operations (particularly where rail operating speeds are concerned). The cost of retrofitting an existing rail corridor to obtain additional rail capacity would be proportionately greater than providing the same capacity in a new location;
- (7) while the C3 option of the new Northern Line alternative costs \$725 million, somewhat more than providing technological improvements to the current system at a cost of \$577 million, the added benefits of a new, non-restricted corridor against the constraints that exist on the CP North Toronto line are or should be obvious.

As a result, the only reasonable conclusions that can be drawn are:

- (1) construct a new rail corridor outside of Metropolitan Toronto and relocate to it dangerous goods and other non-Metro oriented rail traffic presently using the CP North Toronto line. The C3 Northern Line alternative is the preferred new route;
- (2) if it is not feasible to proceed with such a project at the present time, for whatever reason, then steps should be taken to ensure that the Federal Government protects the option for a new rail corridor (C3 Northern Line option) for future use;
- (3) whether a decision is made to implement a new rail line in the immediate future or in the long term, a substantial period of time will be required before implementation is completed. In the interim, the Federal Government should make a firm decision to:
  - (a) further examine and implement operational and safety improvements which do not require extensive capital funding on existing rail corridors within Metropolitan Toronto;
  - (b) advise municipalities what actions will be undertaken and how these actions are intended to reduce risks;
  - (c) effectively monitor rail safety and operational improvements, as well as any new rail regulations to be implemented to determine whether they will be beneficial;
  - (d) coordinate the development of policies and procedures for emergency preparedness so that municipalities have the resources, experience and ability to deal with dangerous goods rail disasters;



- (e) assume the responsibility for funding municipal emergency response programs, particularly towards offsetting resource costs (personnel, equipment, etc.);
- (f) provide more information to the public pertaining to the risk of dangerous goods shipments by rail;
- (g) maintain the voluntary 25 m.p.h. maximum speed limit for trains carrying dangerous goods or commodities until further analysis is undertaken with respect to the specific conditions related to the CP North Toronto rail line; and
- (h) retain cabooses on trains transporting dangerous goods or commodities through the Metropolitan Toronto area.



List of Exhibits

Exhibit No.	Description
1	Description of Technical Studies (undertaken by Federal Task Force)
2	Metropolitan Council and Area Municipal response to Federal Task Force, January 20, 1987
3	Metropolitan Council response of September 16, 1986
4	Metropolitan Council response of October 25, 1983
5	Map illustrating proposed Rail Corridor Alternatives
6	Rail Corridor System Alternatives
7	Societal Risk for Rail System Alternatives
8	Societal Risk due to Various Hazardous Events
9	Societal Risk versus Cost of Various Corridor Options
10	Capital Cost Estimates of Various Corridor Options



**ATTACHED SUBMISSIONS  
UNDER SEPARATE COVER**

1. **A Strategic Overview — Hazardous Goods Transportation by Rail in Toronto**, for the City of Toronto Planning and Development Department, by Philip E. Wade Associates, November 1986.
2. **Report on a Survey of Public Perception regarding the Transportation of Dangerous Goods by Rail**, prepared for the City of Toronto Planning and Development Department, by The Levy-Coughlin Partnership, December 1987.





